Trombidiidae (Acarina: Prostigmata) collected from South African grass and soil.

by

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ABSTRACT

Keys to the genera and species of Trombidiidae collected from South African grass and soil are given. Five new species are described and figured: *Ettmülleria pretoriae, Allothrombium lawrencei, Microtrombidium grahami, M. potchefstroomense, M. spinosum* and *Enemothrombium curiosetosum.*

INTRODUCTION

The present paper contains descriptions and figures of five new species of the family Trombidiidae. The material was collected in Bathurst, Pretoria and Potchefstroom. This study was assisted in part by grants from the Council for Scientific and Industrial Research and the Department of Agriculture. It is evident that many new species of this family still await description. The types of the new species described in this paper are deposited in the collections of the Institute for Zoological Research, Potchefstroom University. The authors wish to thank Prof. G. T. S. Eiselen and Dr. J. A. van Eeden for helpful suggestions and constructive criticisms of the manuscript.

SUPERFAMILY **TROMBIDOIDEA** BANKS, 1904.

These large mites are provided with a well developed palpal thumb-claw complex; the chelicerae are distinctive in that the movable chela is strong, short, hooklike and provided with distal teeth; the stigmata open at the base of the chelicerae and free peritremes are usually absent; the body is densely covered with short setae; the propodosoma is usually provided with a crista metopica or sclerotized sensory area and only a single pair of sensory setae; genital suckers are present; the tarsi are provided with claws and empodia may be either present or absent. The larvae are heteromorphic.

The following two families are included in this superfamily: Trombidiidae Leach, 1815 and Trombiculidae Ewing, 1944.

Family TROMBIDIIDAE Leach, 1815.

The trombidiids are extremely numerous in both numbers and different species and can be recognised by their velvety appearance resulting from their dense coat of setae. The body, which is divided into a more or less distinct gnathosoma, propodosoma and hysterosoma, is never 8-shaped. The chelicerae each consists of a basal muscular segment and a curved, blade-like distal portion, the latter being provided with saw-like teeth on its dorsal edge. Free peritremes are usually absent and the stigmata open near the medio-dorsal, proximal surface of the chelicerae. The five-segmented palpus is provided with a terminal tibial claw which is opposed by the palpal tarsus in a thumb-like manner. A dorsal scutum or crista metopica is situated on the median portion of the propodosoma. One (very seldom two) pairs of sensory setae are located on the lateral expansions of the scutum. Anteriorly the scutum ends in an expanded plate that may project over the gnathosoma as a tectum and bearing numerous setae. The plate may also be absent and the scutum rudimentary, consisting only of areas for the origin of the sensillae. The members of the Stygothrombiinae are extremely degenerate. They have long and worm-like bodies without numerous setae and typical mouth parts.

Thor & Willmann (1947) divided this family into fifteen subfamilies. One of these the Trombiculinae is now generally regarded as a separate family.

Key to the South African species and genera of the family Trombidiidae.

1. Larvae with two median dorsal plates, the anterior one with eight setae, posterior one with two (seldom four) setae; third pair of legs with one deformed claw . . . . **Ettmülleria** Oudemans

   a. Postero-median plate more or less elliptical (65 μ long and 156 μ broad); posterior portion of body with thirteen pairs of setae; two pairs of which are borne on four rounded plates; the others set on tubercles; distal pair the longest (111 μ); length of body (including gnathosoma) 394 μ; breadth 200 μ . **E. pretoriensis** n.sp.

—. Adults 2

2. Peritreme associated with cheliceral stigmata; eyes on movable peduncles; tarsus with empodium between two claws . . . . . **ALLOTHROMBIINAE**

Empodium consisting of two thin fringed structures; crista consisting of three parts, median part shield-like; two pairs of eyes on movable peduncles; dorsal body setae long and feathered . **Allothrombium** Berl.

a. Dorsal feathered setae measuring 45—75 μ; sensory setae on crista 130 μ; length of body excluding gnathosoma) 787 μ; length (including gnathosoma) 1022 μ, breadth 425 μ . . . **A. lawrencei** n.sp.

—. Peritreme absent; double eye (very seldom without eyes) on either side of crista, not on movable peduncles . . . MICROTROMBIDIINAE

3. Dorsal setose setae even or of different lengths; the palpal tibia with or without an accessory claw and one or two external spines; legs I and IV shorter than the body . . . . . **Microtrombidium** Haller

a. Twelve spines arranged into two combs of five and seven respectively, situated posterior to the accessory claw on the inner side of the palp; tarsus I 213 μ long and 112 μ broad; length of body (excluding gnathosoma) 1325 μ; length (including gnathosoma) 1620 μ; breadth 940 μ . . . . **M. grahami** n.sp.

—. Palpal tibia with less than twelve spines on inner side . . . b

b. Dorso-medially, palpal tibia with five spines arranged into two groups of two and three respectively; dorsal setae measuring 26—38 μ; tarsus I 147 μ long and 86 μ broad; length of body (excluding gnathosoma) 1300 μ; length (including gnathosoma) 1510 μ; breadth 710 μ . . . . **M. potchefstroomense** n.sp.

—. Dorso-medially, palpal tibia with three spines; sensory setae on crista 101 μ; dorsal body setae short (17 μ); tarsus I 125 μ long and 44 μ broad; length of body (excluding gnathosoma) 777 μ; length (including gnathosoma) 976 μ; breadth 500 μ . . . . **M. spinosum** n.sp.

—. Usually with two or more different types of setae (pearshaped clubshaped etc.) which are feathered or covered with long barbules . . . . **Enemothrombium** Berl.

a. Dorsal body setae foliolated in dorsal view and provided with many small spines and six to eight strong barbules dorso-laterally; length of body (excluding gnathosoma) 602 μ; length (including gnathosoma) 762 μ; breadth 404 μ . . . . **E. curiosetosum** n.sp.

Genus ETTMÜLLERIA Oudemans, 1911.

This difficult and perhaps even hypothetical genus was erected to accomodate a larval form described by Trägärdh as *Trombidium sucidum.* Some authors consider this genus as representing a subgenus of *Microtrombidium* while other treat is as an independent genus. No definite proof exists as to which group of known adults these larval forms correspond.

Thor & Willmann (1947) defined this genus as follows: Larvae which are provided with two median dorsal plates, of which the anterior one bears eight setae (including the two sensory setae) and the posterior one two (seldom four) setae. The anterior edge of the antero-median plate is curved ventrad. Behind the dorsal plates a number of pappillary plates may be present, each bearing a single seta. One of the claws of leg III is deformed.

Ettmülleria pretoriensis n.sp. (Figs. 1-2).

This species can be separated from closely related forms on the basis of the shape of the postero-median plate, and the presence of thirteen pairs of setae on the posterior portion of the body.

Dimensions: Length of body (including gnathosoma) 394 μ; breadth of body 200 μ. The body is oval-shaped.

Dorsum (fig. 1). The antero-median plate bears one pair of sensory setae and three pairs of ordinary setae; the anterior sublateral pair are relatively shorter and finer than the others. One pair of sublaterals are situated more or less in the middle of the plate and one pair at its posterior corners. Only one eye could be observed near the lateral margin of the antero-median plate. As in *E. obscura* Womersley the sides of the postero-median plate are pointed but the fact that the posterior edge of the plate is not deeply convex medially, differentiates these two species. The shape of this plate can be described as more or less elliptical and it is 65 μ long and 156 μ broad. As in *E. obscura*, *E. australis* Womersley and *E. sucidum* Trägårdh one pair of setae is situated behind the middle of the postero-median plate. Similar to the condition in *E. sucidum* but differing from *E. australis* and *E. obscura*, this species has four inconspicuous rounded plates, the two in the postero-median region being the biggest; each of these plates bears a seta and laterally to them three pairs of setae are borne on tubercles. The interscutal membrane is striated. Eight pairs of setae, seven pairs of which each measures 41 μ and one posteriorly measuring 111 μ, are set on tubercles on the posterior extremity of the body. All the dorsal setae are distinctly setose.

Venter. The ventral surface is similar to that of *E. sucidum.* Coxa I is provided with two setae, coxae II and III each with one seta. Two setae which are set on tubercles are situated immediately anterior to coxae III. On each side of the anus two setae arise from tubercles.

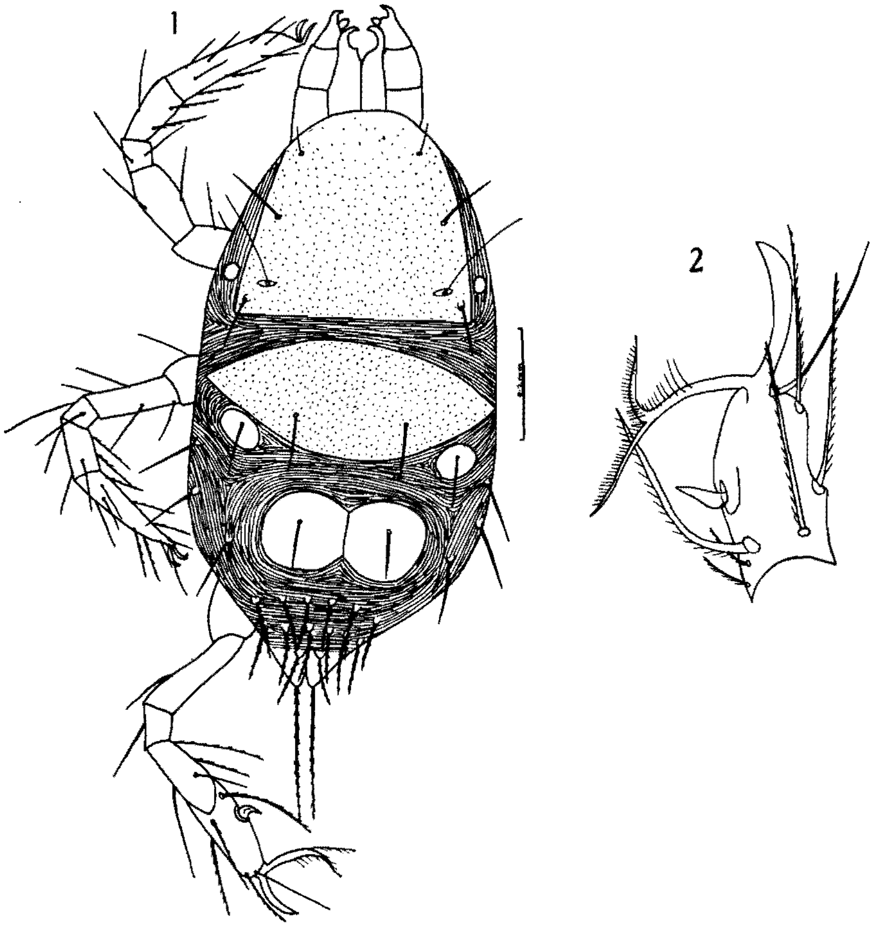
Gnathosoma. The penultimate segment of the three-segmented palpus is provided with one claw. The chelicerae are normal for the genus.

Legs. All the legs are shorter than the body. Tarsi I and II are each provided with two claws; tarsus III is shown in fig. 2.

Habitat and Locality. The holotype from an unidentified wild shrub, Pretoria (Tvl.), January 1956 (P. A. J. Ryke).

Subfamily ALLOTHROMBIINAE Thor, 1935.

The trombidiids belonging to this subfamily can be recognised by the following characteristics: The body is large and provided with feathered, seldom furcate setae. Each side of the propodosoma bears two eyes situated on a long peduncle. The crista is distinctly tripartite and has a large broad, cross or heart-shaped sensillary area which is provided with two pseudostigmal setae. The palpi are large and each is provided with a large apical claw but they are devoid of accessory claws or combs of spines. The legs are short or



Figs. 1-2. *Ettmülleria pretoriensis* n.sp. larva.
Fig. 1, dorsum; fig. 2, tarsus III.

of moderate length; the tarsi are provided with characteristic pulvilli or as in the genus *Coreothrombium,* a brush-like bristle is present on the outer side of each claw.

Genus **ALLOTHROMBIUM** Berl., 1903,

This genus constitutes a very homogeneous group and can be recognised by the following: The tarsus is provided with a pulvillus which consists of two thin fringed structures. According to André (1958) this pulvillus is not an empodium but only took over its functions; it consists of modified setae. The crista is divided into three parts; the median part is shield-like and provided with two long pseudostigmatic setae. The two pairs of eyes are carried on movable peduncles. The body setae are long and feathered.

Allothrombium lawrencei n.sp. (Figs. 3-8).

This species resembles *A. fuliginosum* (Herm.) in the shape of the crista but differs from it by its size and by the relative length of the dorsal setae and the sensory setae on the crista.

Female (fig. 3).
Dimensions: Length of body (excluding gnathosoma) 787 μ; length (including gnathosoma) 1022 μ; breadth of body 425 μ; length of leg I 626 μ, leg II 437 μ, leg III 334 μ, leg IV 500 μ. The body is egg-shaped and the colour probably red.

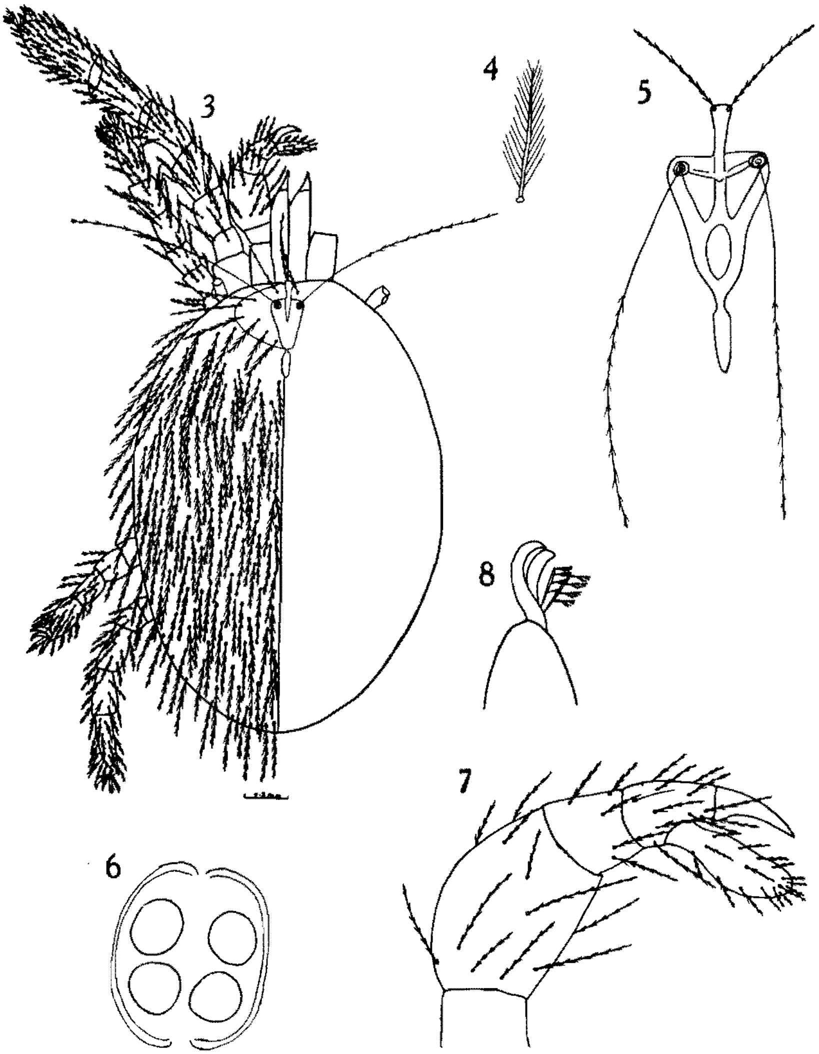
Dorsum. The entire dorsum is thickly covered with feathered setae (fig. 4) which measure 45-95 μ. In this respect it differs from *A. fuliginosum* in which the dorsal setae are much longer (150—190 μ). The triangular median portion of the crista (fig. 5) bears two sensory setae which are much longer than those of *A. fuliginosum*; they measure 130 μ. The eyes on both sides of the body are situated on peduncles.

Venter. Two pairs of genital suckers (fig. 6) are present.

Gnathosoma. All the segments of the palpi (fig. 7) are covered with setose setae. The palpal tarsus is longer than the claw. The chelicerae are typical for the family.

Legs. All the legs are shorter than the body. Tarsus I is longer than tibia I and is 136 μ long and 61 μ broad. Each tarsus is provided with two claws and a hairy pulvillus (fig. 8). The legs are thickly covered with setose setae.

Habitat and locality. The holotype ♀ from grass and soil, Bathurst (Albany Distr., C.P.), January 1956 (P. Graham).



Figs. 3-8. *Allothrombium lawrencei* n.sp., female.

Fig. 3, dorsum; fig. 4, dorsal seta; fig. 5, crista; fig. 6, genital opening; fig. 7, palp; fig. 8, claw complex of leg I.

Subfamily MICROTROMBIDIINAE Thor, 1935.

The distinctive characters of the subfamily are the following. The cordate body is small or of moderate size. The propodosoma is usually triangular and its base is slightly narrower than the hysterosoma; the latter slightly tapers and is rounded posteriorly. A distinct suture separates the propodosoma from the hysterosoma. The crista is linear and usually devoid of any enlarged triangular or subtriangular anterior area or nasus but is provided with a rounded subposterior areola-like sensillary area which is furnished with a pair of long sensory setae. Two eyes are usually present. The palpi are generally stout and are provided with a stout apical claw, a smaller accessory claw, one or two dorso-medial combs and one or more strong spines laterally. The dorsal setae are variable in form, and may be simple, spinelike, setose or have other curious forms. One species is often provided with setae of distinct sizes or shapes.

Genus **MICROTROMBIDIUM** Haller, 1882.

The members of this genus can be recognised by the dorsal setose setae which may be of equal or variable lengths. The palpal tibia may or may not be provided with an accessory claw and one or two lateral spines. The legs are shorter or slightly longer than the body. The tarsi of the first pair of legs are thickened.

Womersley (1945) in his revision of this genus used the dimensions of the front tarsi and metatarsi and the lengths and structure of the dorsal setae as characters for species distinction.

Microtrombidium grahami n.sp. (Figs. 9-12).

The dorsal chaetotaxy, the first pair of legs and certain aspects of the palp resemble the condition obtaining in *M. tarsale* André. However, the stronger palp which has two combs, consisting of five and seven spines respectively, on the penultimate segment distinguished *M. grahami* from *M. tarsale* and other closely related species of the genus *Microtrombidium*.

Female (fig. 9).

Dimensions: Length of body (excluding gnathosoma) 1325 μ; length (including gnathosoma) 1620 μ; breadth of body 940 μ: The body is oval-shaped.

Dorsum. The middle part of the anterior margin of the propodosoma is fringed with eight long forwardly directed setose setae. The crista metopica (fig. 10) is situated on the median portion of the propodosoma. The crista is provided with two sensory setae each having a length of 85 μ. The entire dorsum is densely covered with setae (fig. 11) which are setose as in *M. tarsale.* The lengths of the dorsal setae are 22—31 μ which are longer than those of *M. tarsale.* One pair of eyes is situated on each side of the body.

Venter. Three pairs of suckers are associated with the genital opening.

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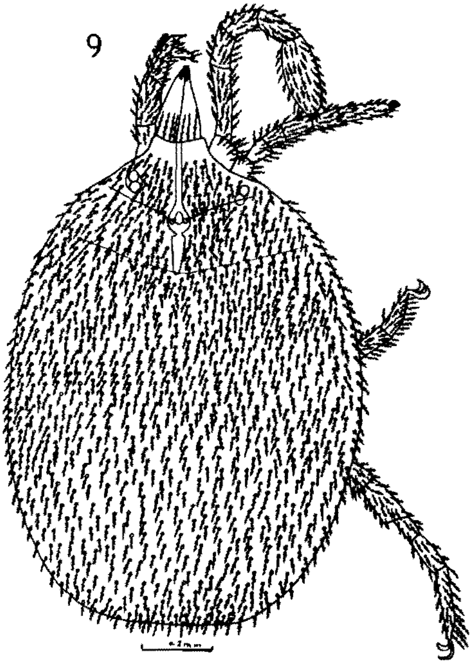

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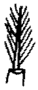

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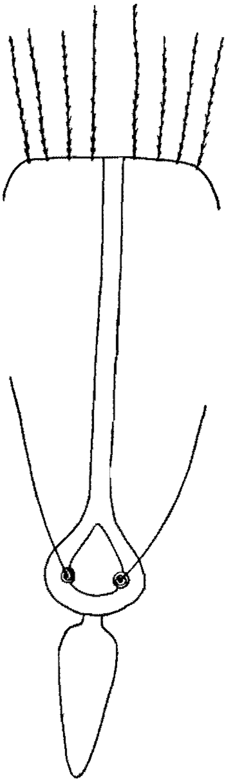

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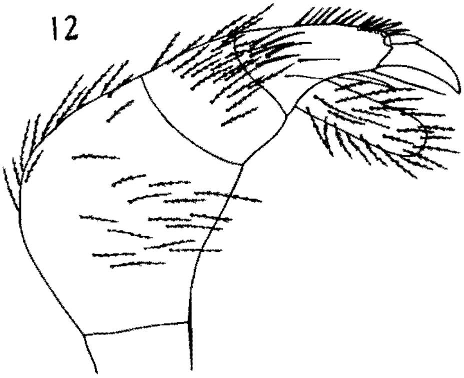

Figs. 9-12 *Microtrombidium grahami* n.sp., female.
Fig. 9, dorsum; fig. 10, crista; fig. 11, dorsal seta; fig. 12, palp.

Gnathosoma. The palpi (fig. 12) are stronger than those of *M. tarsale.* The terminal claw on the penultimate segment is well developed and is accompanied by a shorter but fairly strong accessory claw. Two inner combs, an anterior one consisting of five spines and a posterior one of seven, are present on the penultimate segment. The proximal part of this segment bears five spine-like setae. In additiom to the inner structures the tarsus is also provided with one spine on its outer side. The palpal tarsus is clothed with setose setae.

Legs. All the legs are much shorter than the body and densely covered with setose setae. The tarsus of the first pair of legs resembles that of *M. tarsale* in shape and is 213 μ long and 112 μ broad. Two claws are present on each tarsus.

Habitat and locality. The holotype and four paratypes from grass and soil, Bathurst (Albany Distr., C.P.), January 1956 (P. Graham).

Microtrombidium potchefstroomense n.sp. (Figs. 13-16).

The structure of the dorsal setae, the first pair of legs and the palp are characters that bear a resemblance to those of *M. vilhenaorum* André and *M. robustum* André. *M. potchefstroomense* may, however, be distinguished from these related forms in the number of the spines on the penultimate segment of the palp. In this respect it also differs from other species of *Microtrombidium*.

Female (fig. 13).
Dimensions: Length of body (excluding gnathosoma) 1300 μ; length (including gnathosoma) 1510 μ; breadth of body 710 μ. The body is egg-shaped and about twice as long as broad.

Dorsum. The front margin of the propodosoma is provided with a fringe of long, slender setose setae. The crista (fig. 14) is provided with two long sensory setae. Two pairs of eyes are present on the propodosoma. The dorsum is densely clothed with setose setae (fig. 15) which measure 26—38 μ. These setae are shorter than those of *M. vilhenaorum* and longer than those of *M. robustum*.

Venter. The genital opening is flanked by three pairs of genital suckers.

Gnathosoma. The palpi (fig. 16) are covered with setose setae. The terminal claw is well developed and the accessory claw is much shorter but still fairly strong. Dorso-medially the penultimate segment bears five spines in comparison with the six of *M. vilhenaorum* and *M. robustum*. As in *M. robustum* these spines are arranged into two groups, the anterior group consisting of two spines and the posterior one of three. In this respect it also differs from *M. vilhenaorum*. As in *M. robustum* this segment is also provided with two medially situated spine-like setae. The palpal tarsus is somewhat shorter than the claw and bears distally a rather long and a relatively short seta; the rest of the tarsus is covered with setose setae.

Legs. All the legs are much shorter than the body and are densely covered with setose setae. The tarsus of leg I resembles that of *M. vilhenaorum* in shape but is 147 μ long and 86 μ broad. Each tarsus is provided with two claws.

Habitat and locality. The holotype and one paratype from grass and dead organic material collected under a thorn-tree, Potchefstroom (Tvl.), December 1953 (Meyer & Ryke).

Microtrombidium spinosum n.sp. (Figs. 17-20).

Although this species resembles *M. jabanicum* Berl. as regards the presence of three spines posterior to the accessory claw on the inner side of the palp and a short stout lateral spine, its significantly longer tarsus I readily distinguishes these two species.

Female (fig. 17).
Dimensions: Length of body (excluding gnathosoma) 777 μ; length (including gnathosoma) 976 μ; breadth of body 500 μ. This red mite is more or less cordate.

Dorsum. The distribution of the dorsal setose setae (fig. 18) is moderately dense. These setae are provided with fairly long setules and each has a length of 17 μ. The linear crista (fig. 19) is provided with a sub-posterior sensillary area on its posterior quarter, the two sensory setae each measuring 101 μ; the anterior edge is provided with relatively long setose setae. Two eyes are present on each side, well in front of the sensillary area.

Venter. The genital region is provided with two pairs of suckers.

Gnathosoma. The palpi (fig. 20) are fairly stout; the tibia bears an apical claw and a smaller accessory claw; postero-medially to the latter it is provided with three spines. On its outer side it bears a stout spine. All the segments of the palpus are covered with setose setae.

Legs. The first pair of legs is more or less three quarters as long as the body. The second and third pair are the shortest. All the legs are thickly covered with setose setae. Tarsus I is 125 μ long and 44 μ broad. The tarsi are each provided with two claws.

Habitat and locality. The holotype ♀ from grass, Potchefstroom (Tvl.) May 1958 (Meyer & Ryke).

EXPLANATIONS OF FIGURES.

Figs. 13-16. *Microtrombidium potchefstroomense* n.sp., female.
Fig. 13, dorsum; fig. 14, crista; fig. 15, dorsal seta; fig. 16, palp.

Figs. 17-20. *Microtrombidium spinosus* n.sp., female.
Fig. 17, dorsum; fig. 18, dorsal seta; fig. 19, crista; fig. 20, palp.

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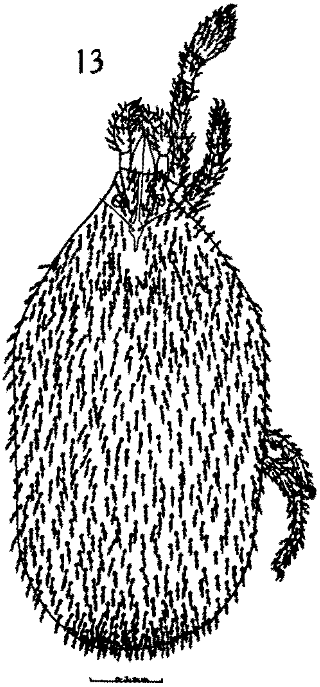

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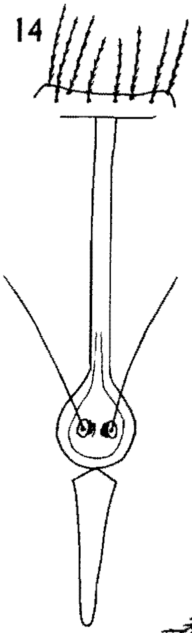

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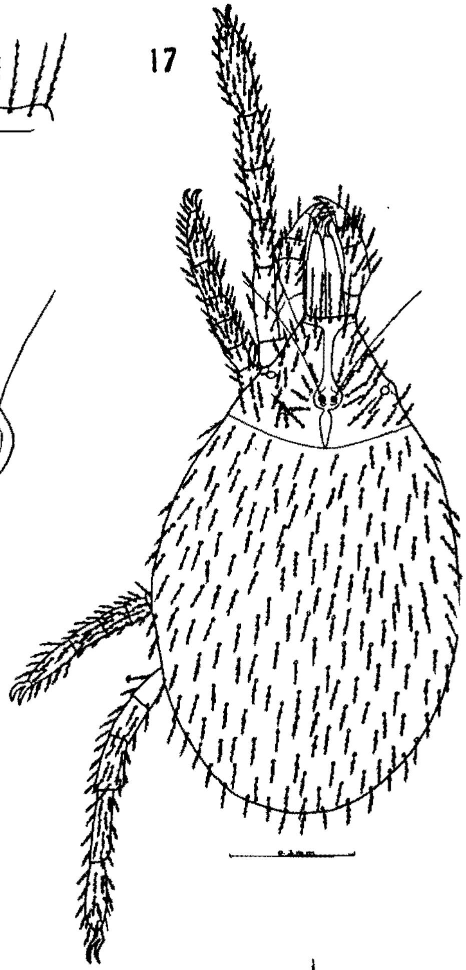

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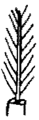

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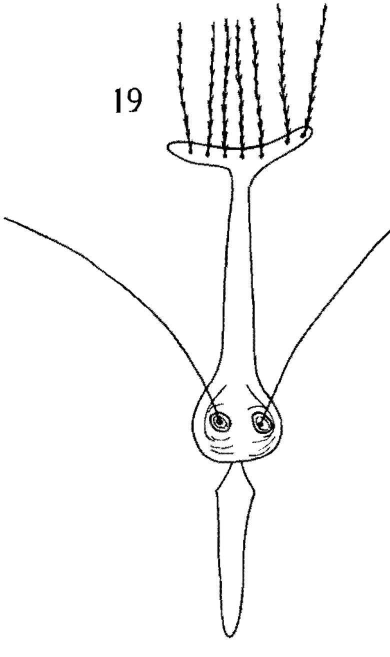

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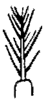

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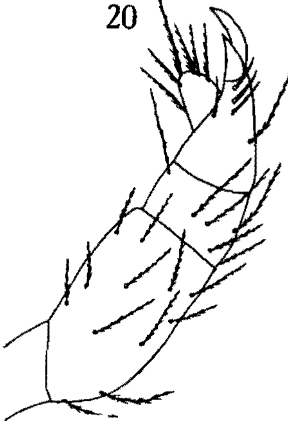

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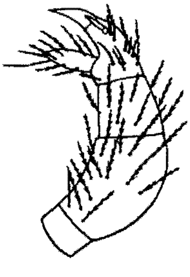

Genus **ENEMOTHROMBIDUM** Berl., 1910.

This genus constituted a reunion of species not presenting any homogeneity. Since 1910 a number of authors tried to group these species in a more natural order and created a number of new genera. André (1958), however, still suggests a further revision of this genus.

Thor & Willmann (1947) defined this genus as follows: The dorsal body setae are of different types e.g. pear-shaped, club-shaped etc. These setae are feathered or covered with long barbules. Each individual is usually provided with two to three different kinds of setae. Several kinds of setae or spines also occur on the fourth palpal segment, frequently arranged into one or two combs.

Enemothrombium curiosetosum n.sp. (Figs. 21-25).

On account of the form of the dorsal setae this species can be separated from all the other species of the genus *Enemothrombium*.

Dimensions: Length of body (excluding gnathosoma) 602 μ; length (including gnathosoma) 762 μ; breadth of body 404 μ; length of leg I 542 μ, leg II 280 μ, leg III 269 μ; leg IV 460 μ.

Dorsum (fig. 21). The dorsum is densely covered with setae (fig. 22 & 23) which appears foliolated in dorsal view; each seta is provided with six to eight strong spines dorso-laterally, as well as with many small spines. The triangular propodosoma bears feathered setae both laterally and posteriorly. The crista (fig. 24) which is situated medially on the propodosoma, is provided with two fine sensory setae. No eyes could be observed.

Gnathosoma. The palpal tibia is provided with a strong claw and four spines on its outer side as well as with a number of setose setae. The remaining segments, as shown in fig. 25, are covered with flattened setose setae. The movable chela is blade-like and finely toothed; the portion of the chelicera projecting below the movable chela consists of a fine transparent membrane.

Legs. The legs are all shorter than the body and thickly covered with setose setae. Tarsus I is more or less twice as long as broad. Each of the tarsi is provided with two claws.

Habitat and locality. The holotype from grass and soil, Bathurst (Albany Distr., C.P.), January 1956 (P. Graham).

EXPLANATIONS OF FIGURES.

Figs. 21-25. *Enemothrombium curiosetosum* n.sp. adult.

Fig. 21, dorsum; fig. 22, lateral view of dorsal seta; fig. 23, dorsal view of dorsal seta; fig. 24, crista; fig. 25, palp.

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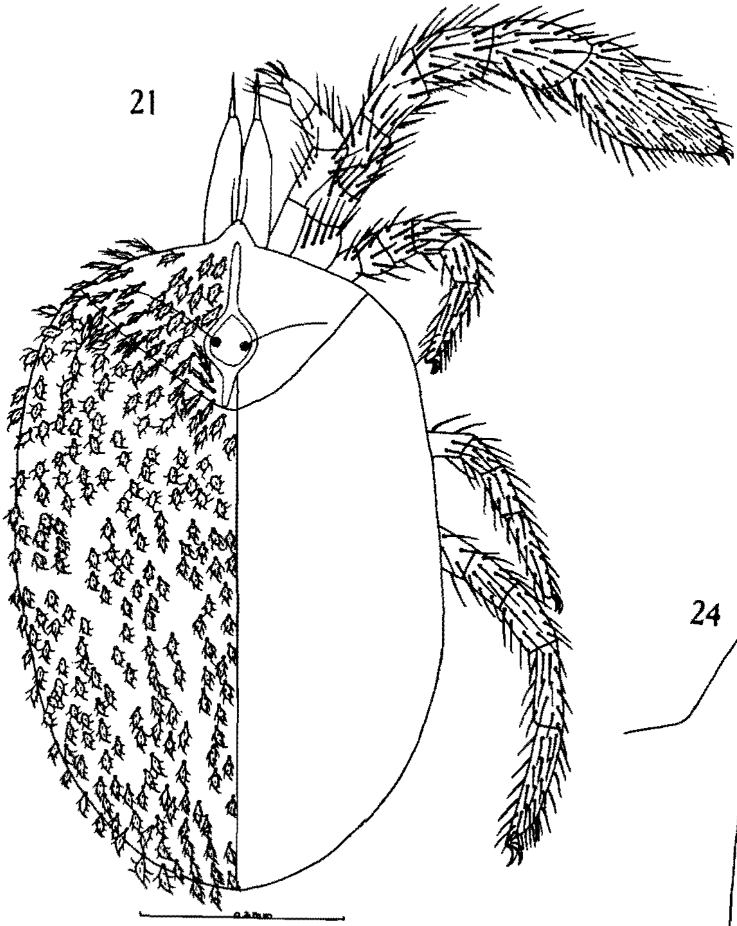

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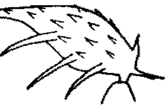

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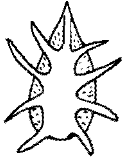

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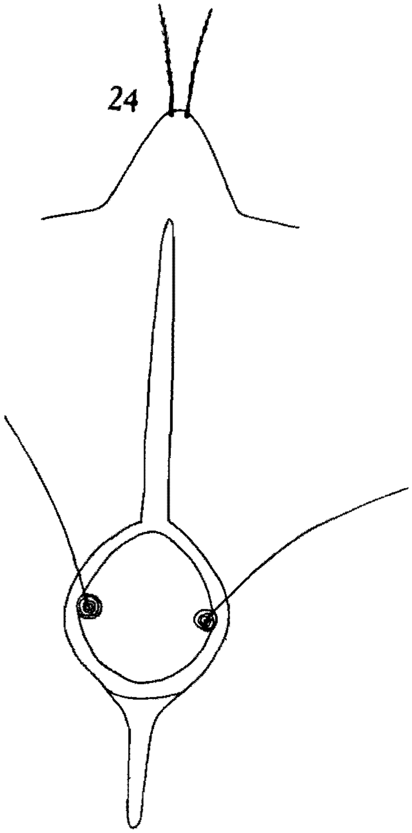

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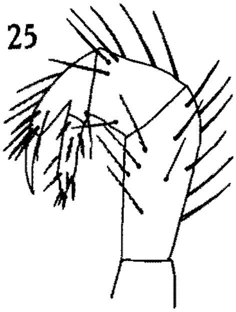

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